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1 TITLE

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3 System and Method to Initiate a Mobile Data Communication Utilizing a Trigger4 System

5

6 PRIORITY CLAIM

7

8 This application claims the benefit of priority of United States Application Number

9 60/397,435, filed July 19, 2002, the entire contents of which are incorporated by

10 reference as if set forth at length herein.

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12

13 FIELD OF THE INVENTION

14

15 This invention relates to enabling communications between users and organizations by

16 means of data enabled mobile communication devices. More particularly this inventions

17 relates to a system, method and machine to enable organizations to execute direct

18 marketing techniques and promotions via mobile communication devices.

19

20

21

22

1 BACKGROUND OF THE INVENTION

2

3 Global brands spend hundreds of billion of dollars annually in the United States on  
4 brand marketing and communications. Over the last decade, an increasing percentage  
5 of brand marketing budgets have been spent in direct marketing channels (e.g., direct  
6 mail, telemarketing, email, etc.). In fact, total brand spending on direct mail now  
7 exceeds that of broadcast television. Given direct marketing's unique capabilities, such  
8 as precise targeting, the ability to drive specific behaviors, and highly measurable  
9 results, marketers are expected to continue spending heavily in direct channels.

10

11 One of the most significant new direct marketing opportunities is the emergence of the  
12 wireless channel. The wireless channel provides marketers the unmatched ability to  
13 reach the individual (not just the household), in a time- and event-sensitive way, with  
14 attractive and measurable marketing return on investment ("ROI"). In Europe,  
15 hundreds of brands are beginning to utilize the wireless data channels and are  
16 committing a sizeable portion of their communications budgets over the next year to  
17 wireless.

18

19 An organization wanting to use data messaging for communication with its user base  
20 needs to make it easy for them to participate. The organization needs to have a means to  
21 obtain a user's mobile device address to be able to communicate with him using his  
22 mobile device data capabilities. The organization needs to obtain the user permission to

1 be able in the future to send new messages, coupons, offers or promotions, to the user's  
2 mobile devices.

3

4 There are multiple ways to for a user to initiate a communication with an organization  
5 and for an organization to obtain a user's mobile device address, but in this invention  
6 we are primarily focused on methods to initiate a communication when said user is in a  
7 mobile setting, such as a public environment as opposed to a home or office  
8 environment. In a mobile setting, there needs to be an easy and quick way for said user  
9 to specify his interest in starting a communication and for the organization to obtain  
10 said user's mobile device address whereby the communication can occur.

11

12 Once the communication is initiated, a message oriented application can capture the  
13 user's mobile device address in a database, and respond back with a message, a coupon,  
14 an offer or a promotion.

15

16 It is important that said user only receive future organization originated ("push")  
17 communications only if he has elected to do so. A system and method to perform  
18 communication between users and organizations needs to support an easy way to either  
19 opt-in or opt-out from receiving future communications.

20

21 An example of a situation where a user may be interested in initiating a communication  
22 with an organization is the case of the organization being a brand sponsoring some

1 event; for example a contest, building brand and product awareness where the user may  
2 win some prizes. Other examples include receiving offers, coupons, promotions or  
3 discounts on their mobile device.

4  
5 The communication, its goals, its benefits and how a user can initiate it is typically  
6 displayed using a traditional channel such as print media, product packaging, bar  
7 coaster, bill-board, sign, posters, TV or radio advertisements, candy wraps, etc... This  
8 process is called the "call to action" message. It is easy to see that if participating is  
9 easy to accomplish, such communications can have a wide impact for both users and  
10 organizations.

11  
12 One very common application of this invention is to deliver coupons, offers and  
13 promotions to users that have requested them. There is a cost for an organization to  
14 provide, promote and deploy systems to execute such mobile coupon, offer and  
15 promotion programs. Hence it is an important requirement that a system be able to  
16 measure redemption rates to compute the effectiveness of the program. In addition,  
17 much better coupons, offers and promotions can be given to individual users if their  
18 past individual receptiveness is known – which makes uniquely identifying the coupon,  
19 offer and promotion important.

20  
21 There is much economical value in being able to deploy a system where users can  
22 receive messages, coupons, offers and promotions at the time of their choosing as well

1 as occasionally receiving push specials thereby allowing the organization running the  
2 program to develop a comprehensive loyalty program bringing value to both the user  
3 and the organization. To support such a program, a system needs to exist to enable users  
4 to enroll, participate and receive occasional "push" messages, coupons, offers and  
5 promotions that leverages the capabilities of mobile data communication devices and  
6 Customer Relationship Management and Loyalty systems.

7

8 In addition, some of the offers, coupons and promotions can be valuable enough that the  
9 organization giving them out wants to make sure they are used only once. Examples of  
10 such compelling offers are very deep discount to join the offer program – think about  
11 book clubs that sell you your first three books for \$1 to join the club. In this case, the  
12 offer needs to be verified that it has not already been redeemed. Such a step is critical  
13 with the technologies described in this invention where it is often easy to forward or  
14 forge a message on a mobile device.

15

16 The primary limitations with existing methods to initiate a communication between an  
17 organization and a user using a mobile device have to do with: the time, effort and lack  
18 of convenience of triggering the communication using current systems; the lack of  
19 common service addresses for users to initiate the communication with an organization  
20 in some common existing messaging technologies; and the lack of familiarity on the  
21 part of users on how to initiate a communication using their mobile device.

22

1 BACKGROUND OF THE INVENTION – PRIOR ART

2

3 Obtaining the user's mobile device address in a mobile setting to allow for  
4 communication is not always straightforward for some classes of mobile devices, in  
5 particular digital cell phones. Almost all digital cell phones sold today have one or more  
6 data messaging capabilities. These may include, but is not limited to, Short Message  
7 Service ("SMS"), Enhanced Messaging System ("EMS"), Multimedia Messaging  
8 Service ("MMS"), Wireless Application Protocol ("WAP") and mobile e-mail. The  
9 large number of digital cell phones in the U.S. makes solving the problem of obtaining  
10 cell phones data address a critical problem to be solved.

11

12 One solution that is used by some wireless carriers to allow a user to initiate a  
13 communication using a cell phone with an organization, is to use a Mobile Originated  
14 ("MO") message sent to a service access code. In the case of a cell phone, a service  
15 access code can either be a short code (a number with less than the regular 10 digits  
16 defined by the North American Numbering Plan ("NANP") – for example "2327") or a  
17 regular NANP 10 digit number. A user that wants to respond to a "call to action"  
18 message sends an MO message to the organization service access code setup by his cell  
19 phone carrier.

20

21 While the above technique using MO messages works can work in geographies that  
22 support standardized service access codes across wireless carriers, it is much less

1 effective in countries that don't. In countries with no standardized service access codes,  
2 like the U.S., it is awkward for an organization to publish different service access code  
3 addresses for each wireless carrier. In addition the MO technique is not effective in  
4 geographies where cell phone users are not familiar on how to send MO messages. The  
5 situation is compounded by the fact that some wireless carriers currently do not offer  
6 third parties the ability to receive MO messages sent to them.

7  
8 It is possible to solve the problem of lack of standardized service access codes by using  
9 an e-mail address instead of the typical telephone digit numbers used for SMS, EMS  
10 and MMS. Using e-mail is possible because most wireless carriers offer the ability for  
11 users to send and receive e-mails from their cell phone, either directly using Simple  
12 Mail Transfer Protocol ("SMTP") or indirectly via SMS, EMS, MMS, WAP, or hyper  
13 text markup language ("HTML") by means of an SMTP gateway provided by the  
14 wireless carriers. A service using e-mail as its service address requires that users enter  
15 the service e-mail address when composing their initial MO message. Unfortunately, it  
16 is often extremely cumbersome for users to enter an e-mail address composed of  
17 alphabetical letters and symbols using a cell phone numeric keypad. For example, on a  
18 Sony-Ericsson T68i phone it takes 34 key presses (assuming no mistakes) to enter  
19 "fun@m-qube.com". Hence user response rates will be extremely low with this  
20 approach.

21

1 Another alternative that can be used to solve the problem of lack of standardized service  
2 access codes is to deploy modem banks of Personal Computer ("PC") based wireless  
3 data cards. Said wireless data card is like a miniature cell phone with its own phone  
4 number. With the peer-to-peer SMS interoperability available in many countries, any  
5 MO message sent to said wireless data card phone number would be delivered to it, and  
6 by extension to the message application server connected to said PC. While this  
7 approach effectively works around the problem of lack of standardized service access  
8 codes, it suffers from severe scalability problems (a card typically cannot handle more  
9 than 2-3 messages per second, and most cards are not designed to be operated  
10 24x7x365.)

11

12 Another alternative is to use a range of numbers for the service access codes normally  
13 allocated to a wireless carrier for use by its subscribers, and reconfigure the carrier data  
14 network elements to forward any MO messages sent to said range, not to a physical cell  
15 phone, but instead to the organization's message application server using a data network  
16 such as the Internet. This solution builds upon SMS interoperability and is scalable. But  
17 it requires that the organization have a relationship with the wireless carrier offering  
18 said range, that said wireless carrier have the capability to offer this service to  
19 organizations, and that other wireless carrier allow this to happen.

20

21 An equally critical consideration is the expertise required from users to send an MO  
22 message using the native mobile device data messaging interface. In particular, not all



1 cell phone users know how to originate a MO message using their cell phone. Another  
2 method is required to allow them to participate before they become more familiar with  
3 their cell phone messaging capabilities. Once a cell phone user receives a message, it is  
4 much easier to reply to it since most cell phone handsets provide some guidance on how  
5 to do so.

6  
7 Or, the user may be familiar with messaging, but the time involved may be a limiting  
8 factor. For example, many users may not be willing because of the inconvenience to  
9 text-in a message when entering in a supermarket to receive tailored coupons, but may  
10 be more willing to use other methods described in this invention to trigger the offers.  
11 This problem is especially acute for mobile messaging technologies that don't rely on  
12 number for addresses, but on long strings like e-mail or instant messaging screen  
13 names. While presumably it is possible to enter a long string using these mobile  
14 devices, this is usually a somewhat slow process. A faster trigger mechanism is  
15 required.

16  
17 Hence existing methods using the native messaging capabilities of a user's mobile  
18 device to support mobile originated messages to allow said user to start a  
19 communication with an organization service are not effective in many situations or  
20 geographies. The limitations of the existing methods makes using the mobile channel as  
21 a direct marketing channel not a cost effective channel; as user response rates would be  
22 too low to cover the campaign costs.

1

## 2 BACKGROUND OF THE INVENTION – OBJECTS AND ADVANTAGES

3

4 The specific object and advantages for this present invention are:

- 5 a) Provides for an alternative to using the mobile device native data  
6 communication interface in cases where there are no unique service address  
7 (common service access codes), no publicly supported service side  
8 infrastructure, or the user is unfamiliar with his device data messaging  
9 capabilities.
- 10 b) Provides for faster and easier methods to trigger a communication between an  
11 organization and a user than by using the device native mobile originated  
12 messaging capabilities.
- 13 c) Some of the embodiments described in the invention, like using an interactive  
14 voice response (“IVR”) system as the trigger system, make it much easier to  
15 collect additional information such as opt-in permission for future  
16 communication or offers, or more information, such as offers of interest to the  
17 user.
- 18 d) Enables simple, fast, practical and economical means to instantly deliver offers,  
19 coupons and promotions to users in public places.

20 Further objects and advantages of this present invention will become apparent from a  
21 consideration of the drawings and ensuing description.

22

1 SUMMARY OF THE INVENTION

2

3 The present solution solves the aforementioned problem not by means of the user  
4 mobile device native data messaging services but by means of an external trigger  
5 system not based on the user mobile device data messaging capabilities.

6

7 Once the trigger system has captured a unique identifier capable of being mapped to the  
8 user mobile device address, a Mobile Terminated ("MT") message is sent to the user.  
9 From then on, the message application server is capable of future communications. The  
10 messages sent to the user can include menus and simple instructions removing the need  
11 for the user to ever originate a sophisticated MO message.

12

13 In one embodiment of the invention, said unique identifier is the mobile device address  
14 itself. In another embodiment of the invention, said unique identifier can be an identifier  
15 that is then used to retrieve the mobile device address. An exemplar embodiment uses  
16 an account number as the unique identifier, and then retrieving the mobile device  
17 address using the account number. The details on how the mobile device address is  
18 retrieved using the account number is well known to those skilled in the art. One  
19 possible implementation is to store the mobile device address in a database using the  
20 account number as the key to a data record holding the mobile device address. Other  
21 exemplary embodiments use a loyalty card number, a social security number, a  
22 membership number or employer number as the unique identifier.

1

2 This invention applies to any message oriented data communication system, including,  
3 but not limited to SMS, EMS, MMS, WAP, hypertext markup language ("HTML"),  
4 xHTML and other HTML derivatives, mobile e-mail, client side mobile device  
5 execution environments such as Java 2 Mobile Edition ("J2ME™"), Brew™, Linux™,  
6 or Symbian OS™.

7

8 A further aspect of the invention, a system and method is also provided to deliver  
9 follow-on messages from the organization once the user mobile device address is  
10 captured.

11

12 A further aspect of the invention, a system and method is also provided to deliver, an  
13 instant mobile coupon, offer, or promotion that can be redeemed providing for a  
14 complete system and method to deliver messages, coupons, offers and promotion to  
15 users.

16

17 In one embodiment, the present solution is a network based system and method,  
18 consisting of a trigger system, a message application server and a mobile device service  
19 provider system. It allows any user equipped with a mobile device capable of receiving  
20 messages to initiate a sequence whereby said user can receive one or more messages  
21 from said message application server. Furthermore, said message application server can

1 store said user mobile device address in a database for later communications from said  
2 message application server to said user.

3

4 The organization service is presented in a traditional media format, including but not  
5 limited to, on a print advertisement, on a product packaging, on a bill-board, on a  
6 poster, on a flyer, on a coaster, on a candy wrap, on a store display, in a TV ad, in a  
7 radio ad, on an Internet site. The presentation includes instructions on how the user can  
8 interact with the trigger system. The presentation is called the "call to action" message.

9

10 In one embodiment, the trigger system confirms the user mobile device address, handles  
11 exceptions, and optionally obtains additional data from the user or opt-in permission if  
12 applicable. Once the session with said trigger system is completed, the trigger system  
13 informs the message application server which sends a message to the user mobile  
14 device.

15

#### 16 BRIEF DESCRIPTION OF THE DRAWINGS

17

18 The foregoing and other features of the present invention will be more readily apparent  
19 from the following detailed description and drawings of the illustrative embodiments of  
20 the invention in which:

21

1 FIG. 1 and 1B depicts aspects of an exemplary embodiment of the present invention in  
2 accordance with the teachings presented herein.

3 FIG. 2 depicts an alternative exemplary embodiment of the present invention in  
4 accordance with the teachings presented herein containing additional components to  
5 deliver messages, coupons, offers or promotions.

6 FIG. 3 depicts an alternative exemplary embodiment of the present invention in  
7 accordance with the teachings presented herein containing additional components to to  
8 track the redemption of coupons, offers or promotions.

9 FIG. 4 depicts an exemplary embodiment of delivering follow-on Mobile Terminated  
10 messages once the user mobile device address is known.

11 FIG. 5 is a functional block diagram of the method of capturing a user mobile device  
12 address and using it to send a message to the user.

13 FIG. 6 is a functional block diagram containing the additional steps to deliver messages,  
14 coupons, offers or promotions to a user.

15 FIG. 7 is a functional block diagram of an exemplary embodiment of coupons, offers or  
16 promotion redemption.

17 FIG. 8 is a functional block diagram to capture a user cell phone number in an  
18 embodiment of this invention where the trigger system is an IVR system.

19 FIG. 9 is a functional block diagram of an alternative exemplary embodiment using an  
20 IVR system as a trigger system containing the additional steps of verifying if the user  
21 calling number is a wireless phone number and capturing additional data.

22

1 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

2

3 Aspects, features and advantages of exemplary embodiments of the present invention  
4 will become better understood with regard to the following description in connection  
5 with the accompanying drawing(s). It should be apparent to those skilled in the art that  
6 the described embodiments of the present invention provided herein are illustrative only  
7 and not limiting, having been presented by way of example only. All features disclosed  
8 in this description may be replaced by alternative features serving the same or similar  
9 purpose, unless expressly stated otherwise. Therefore, numerous other embodiments of  
10 the modifications thereof are contemplated as falling within the scope of the present  
11 invention as defined herein and equivalents thereto. Hence, use of absolute terms, such  
12 as, for example, "will," "will not," "shall," "shall not," "must," and "must not," are not  
13 meant to limit the scope of the present invention as the embodiments disclosed herein  
14 are merely exemplary.

15

16 Turning to FIG. 1 there is shown the basic architecture of one embodiment of a system  
17 10 for capturing a user mobile device address by means of a trigger system. The system  
18 comprises a trigger system 102 which can be triggered by a user 100 using a trigger  
19 device. Said trigger system 102 is connected by means of a data network 104 to a  
20 message application server 106. The message application server 106 is further  
21 connected to a mobile service provider or carrier system 110 by means of a data  
22 network 108 and the mobile service provider gateway 112. The mobile service provider

1 gateway 112 acts as a gateway into the mobile service provider network 114. The  
2 mobile service provider gateway 112 is further capable of sending messages to the user  
3 100 mobile device 116 by means of the service provider mobile network 114. Said user  
4 100 can then read messages sent to his mobile device 116.

5  
6 The trigger system 102 is any system capable of capturing a unique identifier capable of  
7 being transformed into the user mobile device 116 messaging address, and optionally  
8 other data. The system described in this invention requires that the trigger system 102 or  
9 the message application server 106 be able to directly or indirectly retrieve the mobile  
10 device 116 address based on said unique identifier captured by the trigger system 102,  
11 and be able to use the mobile device address to send messages to the mobile device 116.  
12 Once the trigger system 102 is triggered by user 100, it sends said mobile device  
13 messaging address or said user unique identifier along with any other captured data to  
14 the message application server 106 by means of data network 104.

15  
16 The trigger system 102 can be triggered by the user either by using his mobile device  
17 116, or by using any other system or method.

18  
19 In one exemplary embodiment of this invention, the trigger system is a computing  
20 device equipped with a card reader where the magnetic stripe of the card contains said  
21 unique identifier.

22



1 In one exemplary embodiment of this invention, the trigger system is a computing  
2 device equipped with a bar code reader. The user swipes an object with a bar code  
3 containing said unique identifier, such as a key chain card.

4

5 In one exemplary embodiment of this invention, the trigger system consists of Radio  
6 Frequency Identification ("RFID") readers located in public areas, for example at the  
7 doors of stores. The user carries an object with an embedded Radio Frequency  
8 Identification RFID tag containing said unique identifier. The trigger system is simply  
9 triggered by the user when walking through or near the RFID readers.

10

11 In one exemplary embodiment of this invention, the trigger system is a client  
12 application running on the user mobile device combined with a server side system. The  
13 communication is triggered when the user activates the application and instructs it to  
14 trigger the interaction. The client application, by means of the data messaging  
15 capabilities of the mobile device notifies the service side system, which can be the  
16 message application server, to initiate the communication.

17

18 In one exemplary embodiment of this invention, the trigger is a client application  
19 running on the user mobile device combined with a local receiver system. The  
20 communication is triggered when the user activates the application and instructs it to  
21 trigger the interaction. The client then uses a local networking infrastructure such as

1 infra red, Bluetooth®, WiFi or any other local wireless protocol to send the trigger to  
2 said receiver system which forwards it to the message application server.

3

4 In one exemplary embodiment of this invention the trigger system is any system  
5 capable of performing biometric or user identification of said user. Examples of such  
6 system include but is not limited to finger-print readers, eye readers, voice identification  
7 and video camera identification.

8

9 In one exemplary embodiment of this invention, the trigger system is a kiosk where the  
10 user enters the unique identifier in the kiosk – for example using a keyboard, a keypad  
11 or a touchscreen.

12

13 In one exemplary embodiment of this invention, the trigger system 102, is an IVR  
14 system accepting phone calls which is programmed to capture said unique identifier.  
15 Various techniques known to those of skill in the art can be used to capture said unique  
16 identifier. This includes but is not limited to accepting Dual Tone Multi Frequency  
17 (“DTMF”) or using voice recognition. The user triggers an interaction with the system  
18 by calling a phone number mapping to the IVR system and entering at the prompt said  
19 unique identifier and any additional data requested by the IVR. At the end of the call, all  
20 the captured information is forwarded to the message application server.

21

1 In one embodiment of this invention, the trigger system 102 is an IVR system and the  
2 mobile device 116 is a data enabled cell phone or any data device capable of receiving  
3 messages sent to a phone number address as described previously. In such embodiment,  
4 the IVR system can be further programmed to automatically capture the calling number.  
5 Capturing the calling number is very common in IVR systems using the Public Switch  
6 Telephone Network ("PSTN") Caller Id infrastructure. If the phone call is made using  
7 said cell phone, and the calling number is made available to the IVR, then the step of  
8 capturing the cell phone number can be further accelerated by spelling out the number  
9 and asking the user to validate the number. For example, the confirmation can be  
10 achieved using the following message: "You called from XXX-XXX-XXXX, if this is  
11 correct press 1, to enter a different phone number press 2". If the user confirms the  
12 number then the IVR can move on to capturing the optional data. If the user does not  
13 confirm the number, then the IVR can prompt the user for a new mobile device phone  
14 number. This last case is useful for example if the user called from a land based line and  
15 the IVR recognized the land line number. If the IVR does not receive the calling  
16 number from the PSTN, then the IVR system is programmed to directly prompt the user  
17 for his mobile device phone number.

18

19 In one exemplary embodiment, the trigger system 102 is wireless card attached to a  
20 computing device as described earlier. In the prior art section, we mentioned that  
21 wireless data cards suffer from scalability limitations. In this embodiment of the  
22 invention, the wireless data card is used only as a trigger system to receive the first MO

1 message. All follow-on messages can then be sent to the user mobile device 116, using  
2 the mobile device 116 mobile service provider specific short code for this program. This  
3 invention overcomes the lack of standardized short codes in certain geographies and the  
4 lack of scalability of PC based wireless cards by using the wireless card only as a  
5 trigger system and not for subsequent message delivery. For example, the user would  
6 send an initial MO message to the wireless data card number, say NNN-NNN-NNNN  
7 which would be routed to the wireless data card using the carrier peer-to-peer  
8 infrastructure. The response from the message application server 106, would then use a  
9 separate service address for each carrier. Carrier A may use a five digit short code  
10 XXXXX, carrier B a six digit short code XXXXXX, and carrier C a normal ten digit  
11 number MMM-MMM-MMMM. When the user receives the message, he can easily  
12 reply back and the fact that each user may be using a different address because they  
13 have a different wireless carrier is not an issue.

14

15 In one exemplary embodiment, the trigger system 102 is a phone switch. The phone  
16 switch is connected to the PSTN SS7 network. Upon receiving a call establishment  
17 request, the phone switch would refuse such request, capture the user calling number  
18 and forward said caller number to the message application server 106. The advantage of  
19 this embodiment is that neither the user nor the organization is billed for the call, since  
20 it was not completed, and the organization does not incur an IVR cost. The downside is  
21 additional data cannot be captured on the user, and the end user experience is probably  
22 strange as the call is not accepted.

1

2 In another embodiment, the trigger system is a computing device where the user  
3 supplies her mobile device address connected to the message application server using a  
4 data network, including but not limited to the Internet. In another embodiment, the  
5 trigger system is a network accessible computing device that the user connects do using  
6 another device – for a example a web and WAP application accessed from a client  
7 computer using a browser - connected to the message application server using a data  
8 network.

9

10 The presented embodiments for the trigger system 102 are illustrative only and not  
11 limited to the ones presented. Numerous other embodiments of the trigger system 102  
12 are contemplated as falling within the scope of this invention.

13

14 The data network 104 is any data network using any messaging protocol. In one  
15 exemplary embodiment, the network is based on TCP/IP and the trigger system 102  
16 forwards the unique identifier and optional data using a Web Service call based on the  
17 Simple Object Access Protocol (“SOAP”).

18

19 The message application server 106 is any computing server designed to process  
20 messages. It is programmed to be able to execute instructions upon receiving incoming  
21 messages from mobile devices, such as mobile device 116, and from any other external  
22 source. One of the instructions that the message application server is capable of

1   executing is sending messages out to mobile devices. One of the event requests capable  
2   of triggering the message application server 106 to execute said instructions is the  
3   receipt of a notification that a user triggered the trigger device 102.

4

5   In one exemplary embodiment, the message application server 106 is implemented as a  
6   cluster of Java 2 Enterprise Edition ("J2EE™") components running on commonly  
7   available computer hardware running commonly available operating systems. In one  
8   exemplary embodiment, the message application server 106 is implemented using the  
9   Jboss™ Java application server and uses an Oracle® database to maintain persistent  
10   data. In one exemplary embodiment the dialog instructions to execute upon receiving an  
11   MO message or a trigger requests are implemented in one or more extensible markup  
12   language ("XML") document(s). Multiple other embodiments of the message  
13   application server are possible and known to those of skill in the art.

14

15   In one preferred embodiment, the message application server 106 is additionally  
16   connected to a message application database 120. The database can be used as part of  
17   the implementation of the message application server. In one exemplary embodiment,  
18   the database stores data on the active communication programs, including but not  
19   limited to, program data; user data; user session data; system logs. The usage of a  
20   database to implement sophisticated server applications is well known to those of skill  
21   in the art and many possible usage of the database is possible and within the scope of  
22   this invention.

1

2 The message application server 106 is connected to one or more service provider  
3 gateway 112 using any suitable data network 108. In an exemplary implementation, the  
4 data network is the Internet using a virtual private network ("VPN") using the short  
5 message peer-to-peer ("SMPP") protocol. Other exemplary implementations use the  
6 Internet without a VPN, use private TCP/IP based connections ("leased line"), or use a  
7 dedicated X.25 connection or any other available data network and protocol. The  
8 message application server 106 can simultaneously support multiple mobile service  
9 providers systems 110 and mobile device 116 technologies and hence can be connected  
10 to multiple service providers systems 110. The message application server 106 can be  
11 similarly connected a plurality of trigger system 102.

12

13 The message application server 106 can send, and optionally receive, messages to and  
14 from the mobile device 116, by means of the mobile service provider system 110. The  
15 actual details of the mobile service provider infrastructure are not relevant to this  
16 present invention and in practice take many forms.

17

18 In one exemplary embodiment, the mobile provider system 110 is broken down into a  
19 mobile service provider gateway 112 responsible for interfacing with the message  
20 application server 106 by means of data network 108. Using methods known to those  
21 skilled in the art, messages can be exchanged between mobile devices, such as mobile

1 device 116 and the mobile service provider gateway 112 by means of a mobile network  
2 114.

3

4 The mobile device 116 is any device a user can carry along with him that is capable of  
5 receiving data messages from at least the message application server 106 by means of  
6 the service provider system 110. In general, the mobile device 116 is also capable of  
7 sending messages to the message application server 106 as well as being able to send  
8 and receive messages to other mobile devices and other service applications. More  
9 capable devices can also send messages, or send and receive more complex messages  
10 than text messages such as multi-media messages.

11

12 In one embodiment of the invention, the mobile device 116 is a data enabled cell phone,  
13 or any data device capable of receiving and sending messages sent to a phone number  
14 address. The later can include wireless enabled personal data assistants ("PDA") or any  
15 other computing device capable of receiving messages sent to a phone number.

16

17 In one exemplary embodiment of the invention, the mobile device 116 is a data capable  
18 device capable of receiving and sending messages using e-mail protocols, including but  
19 not limited to SMTP, Post Office Protocol ("POP") and Internet Message Access  
20 Protocol ("IMAP").

21



1 In one exemplary embodiment of this invention, the mobile device 116 is a data capable  
2 device capable of receiving and sending messages using a client application that uses a  
3 data network, including but not limited to the Internet protocol ("IP"). The mobile  
4 device can use any IP transport, including but not limited to 801.11, 801.11a, 801.11b,  
5 801.11g and Wifi.

6

7 In one exemplary embodiment of the invention, the mobile device 116 is a data capable  
8 device capable of receiving and sending messages using an instant messaging protocol.  
9 Examples of instant messaging service provide include, but is not limited to, AOL  
10 Instant Messenger <sup>TM</sup>, Yahoo!® Messenger, MSN® Messenger, Jabber® and other  
11 similar protocols.

12

13 Turning to FIG. 2 there is shown a block diagram of an embodiment of the invention  
14 further comprising components to deliver coupons, offers and promotions to the user.  
15 The message application server 106 is further connected to an offer application 122.  
16 The offer application 122 is connected to an offer database 124.

17

18 The offer application 122 is responsible for selecting and creating coupons, offers and  
19 promotions for said user 100. The coupon, offer or promotion is part of the message that  
20 will be sent to the user device 116 as described above.

21

1 In one embodiment, the coupons, offers and promotions are implemented using an offer  
2 message. In a preferred embodiment, the coupons, offers and promotions are  
3 implemented using an offer code and an offer message. In one exemplary embodiment,  
4 the coupon and promotion offers are represented by numerical codes. In one exemplary  
5 embodiment, the coupons and promotion offers are represented by alphanumerical  
6 codes. In one embodiment, the coupons, offers and promotions are implemented using  
7 data, including but not limited to text data, XML data and binary data, which is  
8 interpreted by an application running on said user mobile device 116. In one exemplary  
9 embodiment, the coupons and promotion offers are represented by graphical images –  
10 including bar codes.

11

12 In one exemplary embodiment each user receives the same coupon, offer or promotion  
13 code. In another exemplary embodiment, each coupon, offer or promotion code is  
14 unique and encodes the coupon, offer or promotion and a user identification. In one  
15 exemplary embodiment, the user identification is a sequence number, a short 3-5 digit  
16 sequence, allowing the encoding of 1000-100,000 unique users. Each time a user  
17 triggers the system and a message, coupon, offer or promotion is generated, a new  
18 sequence number is generated and stored in the offer database with the generated offer.  
19 At redemption time, the sequence number is extracted from the offer code and the most  
20 recent offer with the same offer and sequence number is matched. The benefit of this  
21 exemplary embodiment is to keep the unique identifier short in the common case that  
22 the code is manually entered at redemption time. In most retail environments, the speed

1 of customer checkout is critical and the more digits need to be entered, the longer it  
2 takes to capture the message, coupon, offer or promotion code and the more likely an  
3 input error will be made.

4

5 In one preferred embodiment, the message, coupon, offer or promotion code includes a  
6 checksum digit, using any of the well know checksum algorithms, including but not  
7 limited to the mod 10 algorithm used in credit card numbers, whereby invalid coupon,  
8 offer or promotion codes due to input errors can be determined.

9

10 These various embodiments of coupons and promotion offers are illustrative only and  
11 not limiting, therefore numerous other embodiments of coupons, offers and promotions  
12 on mobile devices fall within the scope of this invention

13

14 The offer database 124 is used by the offer application 122 to store available offers, to  
15 maintain user profile information concerning coupons, offers and promotions, to  
16 maintain logs of created offers. The usage of database to implement sophisticated server  
17 applications is well known to those of skill in the art and many possible usage of the  
18 database is possible and within the scope of this invention.

19

20 In one preferred embodiment, the offer application 122 is connected to an external  
21 system 125 comprising enterprise systems, customer relationship management

1 (“CRM”) systems or loyalty systems that are involved in the generation, redemption  
2 and analysis of the offers.

3

4 Internal details of the offer application and the coupon, offer and promotion codes is not  
5 discussed in further details as they are known to those skilled in the art. Couponing and  
6 all the issues around generating coupons, matching coupons to users based on multiple  
7 parameters including past interaction and demographic data is a well established  
8 industry. All these couponing techniques apply to the coupon generation and fall into  
9 the scope of this invention.

10

11 Turning to FIG. 3 there is shown a block diagram of an embodiment of the invention  
12 further comprising components to track the redemption of coupons, offers or  
13 promotions. The system further comprises above FIG. 2, an offer entry system 130  
14 used to validate and capture coupons, offers, and promotions redemption. The offer  
15 entry device 130 is connected to the offer application 122 by means of a data network  
16 132. Optionally, an external system 121 or 125 interfaces with either the message  
17 application server, the offer application or both.

18

19 In one embodiment, the offer entry system validates the coupon, offer or promotion  
20 code. In one embodiment, the offer entry system captures the coupon, offer or  
21 promotion redemption for storage in the offer database 124. In one preferred

1   embodiment, the offer entry system validates and captures the coupon, offer or  
2   promotion code for storage in the offer database 124.

3

4   In one preferred embodiment, the offer entry system 130 is a computing device located  
5   where the coupon, offer or promotion is redeemed. The coupon, offer or promotion  
6   code is entered at redemption time. In this preferred embodiment the coupon, offer or  
7   promotion code is validated in real-time by checking the code on the offer entry system  
8   130 (for example the offer code can contain a checksum that is verified), then by  
9   sending a request by means of data network 132 to the offer application 122, that  
10   verifies the coupon, offer or promotion code. In this exemplary embodiment,  
11   redemption data can be analyzed by the offer server 122 and reports 134 created.

12

13   In one preferred embodiment, the offer entry system is a point of sale ("POS") terminal  
14   programmed to implement the logic described above. If the coupon, offer or promotion  
15   code is validated in real-time preventing fraud and providing for duplicate checking, it  
16   is possible to offer valuable coupons, offers and promotions that otherwise might not be  
17   economical to provide without such checks.

18

19   In an exemplary embodiment, the offer entry system 130 is a stand-alone computing  
20   device, for example a kiosk. The user enters the coupon, offer or promotion code in the  
21   offer entry system 130, and the offer entry system prints out a paper coupon. The user  
22   can then redeem the paper coupon like regular paper coupons. In an exemplary

1   embodiment, the offer entry system 130 locally stores each redemption, and the data  
2   can be uploaded on a regular basis, by means of a data network 132 to the offer  
3   application 122. In an exemplary embodiment the offer entry device 130 is equipped  
4   with removable storage. On a regular basis the removable storage is replaced and the  
5   content is read on a compatible device and the data uploaded to the offer application  
6   122.

7  
8   In one exemplary embodiment, the coupon, offer or promotion code has the same  
9   format as a payment number like a credit card number. The existing payment processing  
10   infrastructure is used to authorize and capture coupon redemption. The operator of the  
11   system described in this invention would request a unique bank id prefix to distinguish  
12   its offer numbers from credit or payment card numbers. In one exemplary embodiment,  
13   said payment processing infrastructure is configured to track coupon, offer and  
14   promotion redemption and credit the user for his coupon, offer and promotion.

15  
16   The data network 132 is any data network or any means using any messaging protocol  
17   or data representation not necessarily always connected allowing for the transfer of  
18   data, in real-time or in batch mode, from the offer entry device 130 to the offer  
19   application 122. In one preferred embodiment, the network is based on the Internet  
20   Protocol.

21

1 Turning to FIG. 4 there is shown a block diagram of an embodiment of the invention  
2 illustrating how follow-on messages can be sent at later dates to said user 100.  
3 Messages, coupons, offers and promotions are delivered immediately upon the user  
4 activating the trigger system 102. But the organization, can also decide to send further  
5 messages, coupons, offers and promotions to users that have participated previously.  
6 Under this scenario, during the initial communication, the message application server  
7 106, or the offer server 122 stores the mobile device 116 address. At a later date, when  
8 the organization wants to push out new messages, coupons, offers or promotions, the  
9 list of users that have participated is looked up. If the message includes a coupon, offer  
10 or promotion, it may be looked up by the offer application 122 using a mechanism  
11 similar to the one described above. The push message is then delivered to the user using  
12 the same system and method described earlier.  
13  
14 FIG. 5 illustrates the basic steps of the invention. In a typical usage of the invention, the  
15 user 100 is encouraged to trigger the system by a "call to action" message presented in a  
16 traditional media format. The trigger system 102, upon being triggered (step 200) is  
17 designed to capture (step 202) the unique identifier capable of identifying the user  
18 mobile device 116, and optionally other data. The captured data is then forwarded (step  
19 204) to the message application server 106. The message application server 106 then  
20 retrieves (step 206) the mobile device address of the user based on the unique identifier.  
21 The message application server 106 then executes (step 208) a programmed set of  
22 instructions whereby an appropriate response message is generated. Optionally, in step

1 210, all the forwarded data, and any additional data generated by the execution of the  
2 instructions in step 208 are saved in the message application database 120. The response  
3 message is then forwarded to the mobile service provider gateway 112 in step 212, for  
4 delivery to the mobile device 116 by the mobile service provider. Said user can then  
5 read said response message on said mobile device 116 in step 214.

6

7 In an alternative embodiment, step 206 is not performed in the message application  
8 server 106, but instead in the trigger system 102, and either the mobile address or both  
9 the mobile address and the unique identifier are forwarded to the message application  
10 server in step 204.

11

12 FIG. 6 illustrates the basic steps of the invention described in FIG. 5 augmented by the  
13 delivery of a coupon, offer or promotion. The trigger steps 200, 202, 204 and 206 are  
14 the same as in FIG. 5. Instead of directly generating the response message in the  
15 message application server 106, all the user data available in the message application  
16 server including the unique identifier, the mobile device address, the optional user data  
17 is forwarded to the offer application 122 (step 220). Based on all the available data, the  
18 offer server 122 generates an offer (step 222). The generated offer and any other user  
19 data is stored in the offer database 124 (step 224). The response message containing the  
20 coupon, offer or promotion is forwarded back to the message application server 106 for  
21 delivery to the mobile device 116 (step 226). The message delivery steps 210, 212 and  
22 214 are the same as in FIG. 5. Later on the user will redeem the coupon, offer or



1 promotion message, for example in a store. The coupon, offer or promotion being  
2 redeemed is entered (step 228) in the offer entry system 130. Either in real-time or in  
3 batch the redemption data is forwarded to the offer application 122 (step 230). The  
4 redemption data is then stored in (step 232) in the offer database 124. Based on the data  
5 stored in step 224 and step 232 in the offer database 124, reports 134 can be generated  
6 that show redemption rates from which the effectiveness of the promotion can be  
7 measured.

8  
9 FIG. 7 illustrates another preferred embodiment, where the coupon, offer or promotion  
10 is verified after step 228, by interrogating the offer application 122. Started from step  
11 214 of FIG. 6, the offer is entered in the offer entry system 130 in step 228. The offer is  
12 then forwarded to the offer application 122 for verification by means of data network  
13 132 (step 240). The offer is verified by the offer application 122 (that is the offer  
14 application verifies it's a valid offer, and has not been already redeemed if duplicate  
15 checking is configured) (step 242). If the offer is valid, then the redemption proceeds  
16 (246) and the following steps are the same as in FIG. 6. If the offer is invalid, the status  
17 is made available to the offer entry device 130 (step 244). In the case of an invalid offer,  
18 the offer may be re-entered since the offer may have been rejected due to an input error.  
19 If the offer has already been redeemed, there is no benefit in re-entering the offer.

20

21 FIG. 8 illustrates step 202 in an exemplary embodiment where the trigger system 102 is  
22 implemented using an IVR system. The user calls the IVR number. The PSTN delivers

1 the call to the IVR system in Step 300. The IVR system is then programmed to retrieve  
2 the user calling number, using the PSTN caller id support (step 302). If the user calling  
3 number is available, the system spells out the number to the user and asks for a  
4 confirmation in step 306. If the user confirms positively, the user calling number is then  
5 forwarded to the message application server 106 as described in step 204. If the user  
6 confirms negatively (step 306), or the IVR system does not detect the user calling  
7 number in step 302 (for example if the user is blocking caller id), then the IVR is  
8 programmed (step 304) to ask the user to enter his cell phone number. The phone  
9 number can either be entered using the telephone key pad, and the IVR system will  
10 detect the Dual Tone Multiple Frequency ("DTMF") tones, or alternatively using a  
11 voice recognition system. The details on how to program an IVR system to perform the  
12 steps described above are well known to those skilled in the art.

13

14 FIG. 9 is an alternative embodiment of step 202 that builds upon FIG. 7. In FIG. 8 the  
15 initial steps 300, and 302 are the same as in FIG. 8. The calling number supplied by the  
16 PSTN, or entered by the user is analyzed in step 320 to see if it corresponds to a cell  
17 phone number. There are multiple ways to perform this operation which are know to  
18 those skilled in the art. One possible implementation is to lookup the first six digits of  
19 the phone number in a database called the Local Exchange Routing Guide ("LERG")  
20 that contains information on all the PSTN switches. If the phone number corresponds to  
21 a cell phone number, the IVR is programmed to proceed to step 306. If the number does  
22 not correspond to a cell phone number, then the IVR is programmed in step 304 to

1 prompt for a cell phone number as described before. In this alternative embodiment,  
2 step 322 was also added prompting the user for additional data, for example for a choice  
3 of an offer of interest or from a store of interest. Once all the additional data is captured,  
4 the user cell phone and the additional data is forwarded to the message application  
5 server 106 as described in step 204.

6

7 Having now described one or more exemplary embodiments of the invention, it should  
8 be apparent to those skilled in the art that the foregoing is illustrative only and not  
9 limiting, having been presented by way of example only. All the features disclosed in  
10 this specification (including any accompanying claims, abstract, and drawings) may be  
11 replaced by alternative features serving the same purpose, and equivalents or similar  
12 purpose, unless expressly stated otherwise. Therefore, numerous other embodiments of  
13 the modifications thereof are contemplated as falling within the scope of the present  
14 invention as defined by the appended claims and equivalents thereto.

15

16 For example, the techniques may be implemented in hardware or software, or a  
17 combination of the two. In one embodiment, the techniques are implemented in  
18 computer programs executing on programmable computers that each include a  
19 processor, a storage medium readable by the processor (including volatile and non-  
20 volatile memory and/or storage elements), at least one input device and one or more  
21 output devices. Program code is applied to data entered using the input device to

1 perform the functions described and to generate output information. The output  
2 information is applied to one or more output devices.

3

4 Each program may be implemented in a high level procedural or object oriented  
5 programming language to communicate with a computer system, however, the  
6 programs can be implemented in assembly or machine language, if desired. In any  
7 case, the language may be a compiled or interpreted language.

8

9 Each such computer program may be stored on a storage medium or device (e.g., CD-  
10 ROM, hard disk or magnetic diskette) that is readable by a general or special purpose  
11 programmable computer for configuring and operating the computer when the storage  
12 medium or device is read by the computer to perform the procedures described in this  
13 document. The system may also be considered to be implemented as a computer-  
14 readable storage medium, configured with a computer program, where the storage  
15 medium so configured causes a computer to operate in a specific and predefined  
16 manner.

17

18 In a most preferred embodiment, the various components, such as the trigger system,  
19 the message application server, the offer application, etc., are implemented on one or  
20 more computer systems. The multiplicity of the computer system allow for the  
21 distribution of the workload in accordance with, e.g., the number of computer systems  
22 available and enables the system to function even is a subset of the computer systems

1. experience one or more faults. The computers should be connectable to each other, for  
2. example, by means of 100Base-T Ethernet interfaces and corresponding 100Base-T  
3. Ethernet switches. In the most preferred implementation, each computer contains dual  
4. UltraSPARC® III processors, 1024 MB RAM, two 9 GB disk drives, and operates  
5. using the Unix™ compatible Solaris™ operating system. As will be appreciated, the  
6. specific hardware utilized can be varied in accordance with need, required capacity, and  
7. the preferred programming and operating environment, as well as in response to other  
8. factors.

9